

WHAT IS CLAIMED IS:

1. A method to control the post sinter dimensions of a multilayer ceramic substrate sintered under load comprising the steps of:
 - providing at least one first continuous non-densifying structure;
 - providing at least one personalized ceramic greensheet having a local peripheral kerf area and an external peripheral kerf area;
 - placing said at least one first continuous non-densifying structure on the local peripheral kerf area of said at least one personalized ceramic greensheet;
 - placing said at least one personalized ceramic greensheet having said at least one first continuous non-densifying structure in a stack of personalized greensheets;
 - laminating said stack of personalized ceramic greensheets to form a green ceramic laminate wherein said at least one first continuous non-densifying structure will at least partially control the dimensions of said green ceramic laminate during lamination;
 - sintering said green ceramic laminate under load to form a multilayer ceramic substrate wherein said at least one first continuous non-densifying structure will at least partially control the dimensions of said multilayer ceramic substrate during sintering.
2. The method of claim 1 further comprising the step of post sinter sizing said multilayer ceramic substrate thereby separating said at least one first continuous non-densifying structure from said multilayer ceramic substrate.

3. The method of claim 1 further comprising the steps of:
providing at least one second continuous non-densifying structure;
placing said at least one second continuous non-densifying structure on the external peripheral kerf area of said at least one personalized ceramic greensheet prior to lamination wherein said at least one second continuous non-densifying structure will at least partially control the dimensions of said green ceramic laminate during lamination, and
pre-sinter sizing said green ceramic laminate thereby separating said at least one second continuous non-densifying structure from said green ceramic laminate prior to sintering.
4. The method of claim 3 wherein said first and second continuous non-densifying structure is metal, ceramic, polymer, or a combination thereof.
5. The method of claim 3 wherein said first and second continuous non-densifying structure is a metal selected from the group consisting of molybdenum, nickel, copper, tungsten, stainless-steel and zirconia.
6. The method of claim 3 wherein said first and second continuous non-densifying structure has a thickness of approximately 0.0003 inch to 0.001 inch and width of greater than 0.5 millimeters.

7. A method to control the post sinter dimensions of a multilayer ceramic substrate which is laminated and sintered under load as a multi-up green ceramic laminate comprising the steps of:

providing at least one first continuous non-densifying structure;

providing at least one personalized ceramic greensheet having a plurality of product samples separated by a local kerf area and having peripheral external kerf area;

placing said at least one first continuous non-densifying structure on the local kerf area of said at least one personalized ceramic greensheet;

placing said at least one personalized ceramic greensheet having said at least one first continuous non-densifying structure in a stack of personalized greensheets;

laminating said stack of personalized ceramic greensheets to form a multi-up green ceramic laminate wherein said at least one first continuous non-densifying structure will at least partially control the dimensions of said multi-up green ceramic laminate during lamination;

sintering said green ceramic laminate under load to form a multi-up multilayer ceramic substrate wherein said at least one first continuous non-densifying structure will at least partially control the dimensions of said multi-up multilayer ceramic substrate during sintering.

8. The method of claim 7 further comprising the step of post sinter sizing said multi-up multilayer ceramic substrate to form individual multilayer ceramic substrates and thereby separating said at least one first continuous non-densifying structure from said individual multilayer ceramic substrates.

9. The method of claim 7 further comprising the steps of:

providing at least one second continuous non-densifying structure;

placing said at least one second continuous non-densifying structure on the external peripheral kerf area of said at least one personalized ceramic greensheet prior to lamination wherein said at least one second continuous non-densifying structure will at least partially control the dimensions of said multi-up green ceramic laminate during lamination, and

pre-sinter sizing said multi-up green ceramic laminate thereby separating said at least one second continuous non-densifying structure from said multi-up green ceramic laminate prior to sintering.

10. The method of claim 7 wherein said at least one first continuous non-densifying structure further comprises tailored shapes to control local distortion within said product samples.

11. The method of claim 9 wherein said first and second continuous non-densifying structure is metal, ceramic, polymer, or a combination thereof.

12. The method of claim 9 wherein said first and second continuous non-densifying structure is a metal selected from the group consisting of molybdenum, nickel, copper, tungsten, stainless-steel and zirconia.

13. The method of claim 9 wherein said first and second continuous non-densifying structure has a thickness of approximately 0.0003 inch to 0.001 inch and width of greater than 0.5 millimeters.

14. A multilayer ceramic laminate structure comprising:
 - a plurality of laminated ceramic greensheets;
 - at least one personalized ceramic greensheet having a local peripheral kerf area and an external peripheral kerf area;
 - at least one first continuous non-densifying structure placed on said local peripheral kerf area of said at least one personalized ceramic greensheet.
15. The multilayer ceramic laminate structure of claim 14 further comprising:
 - at least one second continuous non-densifying structure placed on said external peripheral kerf area.
16. The multilayer ceramic laminate structure of claim 15 wherein said first and second continuous non-densifying structure is metal, ceramic, polymer, or a combination thereof.
17. The multilayer ceramic laminate structure of claim 15 wherein said first and second continuous non-densifying structure is a metal selected from the group consisting of molybdenum, nickel, copper, tungsten, stainless-steel and zirconia.
18. The multilayer ceramic laminate structure of claim 15 wherein said first and second continuous non-densifying structure has a thickness of approximately 0.0003 inch to 0.001 inch and width of greater than 0.5 millimeters.

19. A multi-up multilayer ceramic laminate structure comprising:
a plurality of laminated ceramic greensheets;
at least one personalized ceramic greensheet having a plurality of product samples separated by a local kerf area and having peripheral external kerf area;
at least one first continuous non-densifying structure placed on said local kerf area of said at least one personalized ceramic greensheet.

20. The multi-up multilayer ceramic laminate structure of claim 19 further comprising:
at least one second continuous non-densifying structure placed on said external peripheral kerf area.

21. The multi-up multilayer ceramic laminate structure of claim 19 wherein said at least one first continuous non-densifying structure further comprises tailored shapes to control local distortion within said product samples.

22. The multi-up multilayer ceramic laminate structure of claim 20 wherein said
first and second continuous non-densifying structure is metal, ceramic, polymer, or a combination thereof.

23. The multi-up multilayer ceramic laminate structure of claim 20 wherein said first and second continuous non-densifying structure is a metal selected from the group consisting of molybdenum, nickel, copper, tungsten, stainless-steel and zirconia.

24. The multi-up multilayer ceramic laminate structure of claim 20 wherein said first and second continuous non-densifying structure has a thickness of approximately 0.0003 inch to 0.001 inch and width of greater than 0.5 millimeters.

25. The multilayer ceramic laminate structure of claim 14 further comprising:
discrete tailored shapes to control local distortion within the multilayer ceramic laminate.